

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.

**THIS PAGE BLANK (USPTO)**

PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau

## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>5</sup> :</b> A61F 13/15	<b>A1</b>	<b>(11) International Publication Number:</b> WO 90/12555 <b>(43) International Publication Date:</b> 1 November 1990 (01.11.90)
<b>(21) International Application Number:</b> PCT/IT89/00084 <b>(22) International Filing Date:</b> 27 December 1989 (27.12.89)  <b>(30) Priority data:</b> 8904 B/89 27 April 1989 (27.04.89) IT  <b>(71)(72) Applicant and Inventor:</b> DE FRANCESCO, Giovanni [IT/IT]; Via Carmelitani Pal.B6, Trappete, I-95037 S. Giovanni la Punta (IT).  <b>(74) Agent:</b> DI GIOVANNI, Italo; Ufficio Brevetti Dott. Ing. Digiovanni Schmiedt, Via Aldrovandi, 5, I-20129 Milano (IT).  <b>(81) Designated States:</b> AT, AT (European patent), AU, BB, BE (European patent), BF (OAPI patent), BG, BJ (OAPI pa- tent), BR, CF (OAPI patent), CG (OAPI patent), CH, + CH (European patent), CM (OAPI patent), DE, DE (Eu- ropean patent), DK, ES (European patent), FI, FR (Eu- ropean patent), GA (OAPI patent), GB, GB (European patent), HU, IT (European patent), JP, KP, KR, LK, LU, LU (European patent), MC, MG, ML (OAPI patent), MR (OAPI patent), MW, NL, NL (European patent), NO, RO, SD, SE, SE (European patent), SN (OAPI pa- tent), SU, TD (OAPI patent), TG (OAPI patent), US.		<b>Published</b> <i>With international search report.</i>
<b>(54) Title:</b> SANITARY TOWEL AND SIMILAR OBJECTS WITH ANTISEPTIC PROPERTIES  <b>(57) Abstract</b>  Sanitary towels in particular nappies, pants for infants, women, incontinent adults, treated with paraoxybenzoate of ethylene glycol phenyl undecyl ether, with chemical products in general having a bactericidal, fungicidal, antiseptic and antifermentative action.		

#### DESIGNATIONS OF "DE"

Until further notice, any designation of "DE" in any international application whose international filing date is prior to October 3, 1990, shall have effect in the territory of the Federal Republic of Germany with the exception of the territory of the former German Democratic Republic.

#### FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	ES	Spain	MC	Monaco
AU	Australia	FI	Finland	MG	Madagascar
BB	Barbados	FR	France	ML	Mali
BE	Belgium	GA	Gabon	MR	Mauritania
BF	Burkina Faso	GB	United Kingdom	MW	Malawi
BG	Bulgaria	GR	Greece	NL	Netherlands
BJ	Benin	HU	Hungary	NO	Norway
BR	Brazil	IT	Italy	RO	Romania
CA	Canada	JP	Japan	SD	Sudan
CF	Central African Republic	KP	Democratic People's Republic of Korea	SE	Sweden
CG	Congo	KR	Republic of Korea	SN	Senegal
CH	Switzerland	LI	Liechtenstein	SU	Soviet Union
CM	Cameroon	LK	Sri Lanka	TD	Chad
DE	Germany, Federal Republic of	LU	Luxembourg	TG	Togo
DK	Denmark			US	United States of America

- 1 -

Sanitary towel and similar objects with antiseptic properties.

- 5 The invention relates to sanitary towels in the form of nappies, pants and the like to be applied to the procto-uro-genital areas, for infants, women and incontinent adults.
- Sanitary towels by their very nature collect and conserve organic liquids.
- 10 These liquids, being excretions from the body, tend to decompose, generate unpleasant smells, infect and irritate the delicate and sensitive parts to which sanitary towels are applied.
- 15 The object of the invention are sanitary towels in their various forms of nappies, pants and the like to render them suitable for infants, women and incontinent adults, treated with chemical preparations having a bactericidal, fungicidal and generally antiseptic action.
- 20 The treatment is performed according to the various cases both on the raw materials which make up the fluff, such as cotton-wool and the like, and on the filtering lining and on the fluff or the linings themselves, or on both, during manufacture of the sanitary towels.
- 25 In another process the sanitary towels are treated after they have been manufactured.
- The treatment is performed advantageously by means of a spraying technique which allows either the fluff or the lining material or both to be impregnated thoroughly and easily, as required, either before manufacture of the
- 30 sanitary towels or during manufacture itself, or on the finished product.
- A particularly suitable chemical preparation for the purposes of this invention is the following:
- 35 paraoxybenzoate of ethylene glycol phenyl undecyl ether solubilized in distilled water with the aid of

cetyltrimethylammonium chloride.

The effects of the above preparation have been checked by numerous experiments.

5 The following are the results obtained at the "Institute of Health and Preventive Medicine" of the University of Catania on 1 September 1989.

12 commercially available sanitary towels and 12 sanitary towels treated with the aforementioned chemical preparation were used.

10 The sanitary towels were impregnated by means of a spraying technique.

A quantity equivalent to circa 1 ml of the product was distributed evenly on each sanitary towel.

15 In order to test antibacterial activity at the outer surface of the sanitary towel, about 4 cm<sup>2</sup> of the surface layer of each sample were soaked with bacterial suspensions of two micro-organisms:

- Gram-positive (*Staphylococcus aureus* ATCC 9144)
- Gram-negative (*Escherichia coli* ATCC 25922).

20 The concentration of these suspensions was circa 10<sup>5</sup> bacteria per ml.

After an hour of contact in an incubator set at 37°C, the samples were pressed onto the surface of a suitable culture medium (Mueller-Hinton's agar) contained in petri dishes.

25 The dishes were then incubated at 37°C for 24 hours. The number of colonies which had developed was then counted. The four columns of the table below give the results obtained:

- column A gives the number of colony forming units (CFU) of *S. aureus* in 12 untreated sanitary towels;
- 30 - column B gives the number of colony forming units (CFU) of *S. aureus* in 12 treated sanitary towels;
- column C gives the number of colony forming units (CFU) of *E. coli* in 12 untreated sanitary towels;
- 35 - column D gives the number of colony forming units (CFU) of *E. coli* in 12 treated sanitary towels.

- 3 -

TABLE

Number of colony forming units (CFU) of S. aureus and of E. coli

	A	B	C	D
5	230	82	250	27
	202	80	230	5
	199	80	195	6
	366	150	190	7
	380	43	340	23
10	215	90	180	0
	255	65	205	15
	389	71	132	9
	108	68	198	11
	263	102	150	7
15	157	88	165	40
	336	114	218	21
-----				
Average	258	86	204	14
-----				
20	Reduction in percentage		77%	93%

As can be seen from this table, the averages of the units (CFU) of S. aureus were 258 for the untreated sanitary towels and 86 for those treated, while the averages of the units (CFU) of E. coli were 204 for the untreated sanitary towels and 14 for those treated.

Therefore the reduction in percentage obtained with the chemical preparation tested on the samples compared was 77% for the units (CFU) of S. aureus and 93% for the units (CFU) of E. coli.

The advantages of the invention are clear.

Using simple means which do not require complicated and costly systems, virtually all the negative consequences which depend on the accumulation of harmful and decomposed substances and their contact, due to the actual nature of sanitary towels, with delicate parts of the human body, are

prevented and fought, above all avoiding irritations,  
infections and unpleasant smells.

5

10

15

20

25

30

35



CLAIMS

- 1) Sanitary towels in general, more particularly nappies, pants and the like for infants, women, incontinent adults, characterised in that they are treated with chemical preparations having a bactericidal, fungicidal, generally  
5 antiseptic and antifermentative action.
- 2) Sanitary towels in general, as in claim 1), characterised in that the treatment by means of chemical preparations is performed on the raw materials which make up the fluff.
- 10 3) Sanitary towels in general, as in claim 1), characterised in that the treatment by means of chemical preparations is performed on the filtering linings of the fluff.
- 4) Sanitary towels in general as in claim 1), characterised in that the treatment by means of chemical preparations is performed on the fluff during manufacture of the sanitary  
15 towels themselves.
- 5) Sanitary towels in general as in claim 1), characterised in that the treatment by means of chemical preparations is performed on the linings of the fluff during manufacture of the sanitary towels themselves.  
20
- 6) Sanitary towels in general, as in claim 1), characterised in that the treatment by means of chemical preparations is performed on the sanitary towels themselves after their manufacture.
- 25 7) Sanitary towels in general, as in claim 1), characterised in that the treatment by means of chemical preparations is performed with a spraying technique.
- 8) Sanitary towels in general, as in claim 1), characterised in that they are treated with a chemical preparation composed of paroxybenzoate of ethylene glycol phenyl undecyl  
30 ether solubilized in distilled water with the aid of cetyltrimethylammonium chloride.

# INTERNATIONAL SEARCH REPORT

International Application No.

PCT/IT 89/00084

<b>I. CLASSIFICATION OF SUBJECT MATTER</b> : Several classification symbols apply, indicate all. <sup>1</sup> According to International Patent Classification (IPC) or to both National Classification and IPC IPC <sup>5</sup> :      A 61 F 13/15								
<b>II. FIELDS SEARCHED</b> <div style="text-align: center; border-top: 1px solid black; border-bottom: 1px solid black;">Minimum Documentation Searched<sup>7</sup></div> <div style="display: flex; justify-content: space-between;"> <div style="width: 40%;">Classification System</div> <div style="width: 60%;">Classification Symbol</div> </div> <div style="padding: 10px 0;">           IPC<sup>5</sup>                                      A 61 F         </div> <div style="text-align: center; padding: 5px;">           Documentation Searched other than Minimum Documentation            to the extent that such Documents are included in the Fields Searched<sup>8</sup> </div>								
<b>III. DOCUMENTS CONSIDERED TO BE RELEVANT<sup>9</sup></b> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%; text-align: left; border-bottom: 1px solid black;">Category<sup>10</sup></th> <th style="width: 70%; text-align: left; border-bottom: 1px solid black;">Citation of Document,<sup>11</sup> with indication, where appropriate, of the relevant passages<sup>12</sup></th> <th style="width: 20%; text-align: left; border-bottom: 1px solid black;">Relevant to Claim No.<sup>13</sup></th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top; padding: 10px;">X</td> <td style="vertical-align: top; padding: 10px;">           US, A, 3093546 (R.L. ATKINSON)            11 May 1963            see the whole document   <div style="text-align: center;">-----</div> </td> <td style="vertical-align: top; padding: 10px; text-align: center;">1-7</td> </tr> </tbody> </table>			Category <sup>10</sup>	Citation of Document, <sup>11</sup> with indication, where appropriate, of the relevant passages <sup>12</sup>	Relevant to Claim No. <sup>13</sup>	X	US, A, 3093546 (R.L. ATKINSON) 11 May 1963 see the whole document  <div style="text-align: center;">-----</div>	1-7
Category <sup>10</sup>	Citation of Document, <sup>11</sup> with indication, where appropriate, of the relevant passages <sup>12</sup>	Relevant to Claim No. <sup>13</sup>						
X	US, A, 3093546 (R.L. ATKINSON) 11 May 1963 see the whole document  <div style="text-align: center;">-----</div>	1-7						
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p><sup>10</sup> Special categories of cited documents: <sup>10</sup></p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 50%;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"Δ" document member of the same patent family</p> </div> </div>								
<b>IV. CERTIFICATION</b>								
Date of the Actual Completion of the International Search <div style="text-align: center; padding: 5px;">12th April 1990</div>	Date of Mailing of this International Search Report <div style="text-align: center; padding: 5px;">21.05.90</div>							
International Searching Authority <div style="text-align: center; padding: 5px;">EUROPEAN PATENT OFFICE</div>	Signature of Authorized Officer <div style="text-align: right; padding: 5px;">  F.W. HECK         </div>							

**ANNEX TO THE INTERNATIONAL SEARCH REPORT  
ON INTERNATIONAL PATENT APPLICATION NO.**

**IT 8900084**

**SA 33621**

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report.  
The members are as contained in the European Patent Office EDP file on 14/05/90  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A- 3093546		None	

EPO FORM 10579

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

**THIS PAGE BLANK (USPTO)**